

ABBREVIATIONS

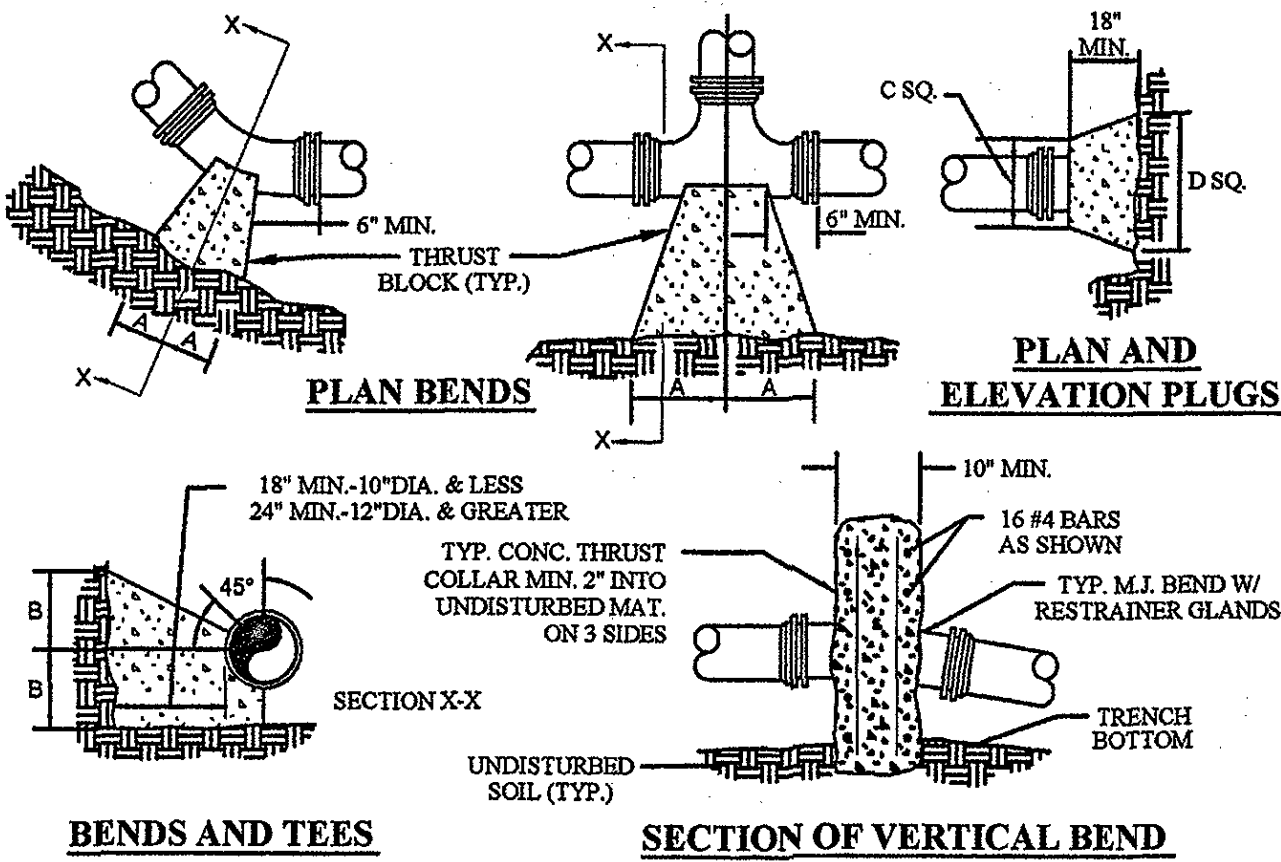
A ₁ AMP	AMPERE(S)
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AT	AMPERE TRIP
BCSD	BARE COPPER SOFT DRAWN
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
C&I	CONTROL & INSTRUMENTATION
CKT	CIRCUIT
CMU	CONCRETE MASONRY UNIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DWG	DRAWING
EA	EACH
ECB	ENCLOSED CIRCUIT BREAKER
EGC	EQUIPMENT GROUNDING CONDUCTOR
EQPT	EQUIPMENT
FLA	FULL LOAD AMPS
FVNR	FULL VOLTAGE, NON-REVERSING
GAL	GALLON
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRSC	GALVANIZED RIGID STEEL CONDUIT
HP	HORSEPOWER
H-O-A	HAND-OFF-AUTO
kcmil	THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERE
KW	KILOWATTS
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
OL'S	OVERLOADS
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PVC	POLYVINYL CHLORIDE
RECEPTS	RECEPTACLES
RMS	ROOT MEAN SQUARE
SYM	SYMMETRICAL
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
V	VOLT(S)
W	WATT(S), WIRE, WIDE
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER
	PHASE
E1	ELECTRICAL UNDERGROUND CONDUITS, PHASE 1
E2	ELECTRICAL UNDERGROUND CONDUITS, PHASE 2
E3	ELECTRICAL UNDERGROUND CONDUITS, PHASE 3
T	TELEPHONE UNDERGROUND CONDUITS
U	UTILITY UNDERGROUND CONDUITS

NOTES:

- COORDINATE ELECTRICAL SERVICE WITH THE POWER COMPANY. SERVICE TO BUILDING SHALL BE RUN UNDERGROUND.
- COORDINATE LOCATION OF ALL EXISTING AND PROPOSED UNDERGROUND UTILITIES BEFORE INSTALLING NEW UNDERGROUND ELECTRICAL WORK.
- BRANCH CIRCUITRY FOR RECEPTACLES HAS NOT BEEN SHOWN. PROVIDE CIRCUIT CONDUCTORS AND CONDUIT AS INDICATED IN THE PANEL SCHEDULES. CONDUITS SHALL BE RUN EXPOSED OR UNDERGROUND AS INDICATED. ALL RECEPTACLES SHALL BE FLUSH MOUNTED.
- ALL RECEPTACLES IN WATERWORKS BUILDING SHALL BE INSTALLED AT 48" AFF UNLESS OTHERWISE INDICATED.
- NO CONDUIT OR JUNCTION BOXES SHALL BE INSTALLED EXPOSED ON THE EXTERIOR OF THE BUILDING.
- ALL CONDUIT STRAPS SHALL BE NON-CORROSIVE, CAST METAL WITH STAINLESS STEEL HARDWARE.
- POWER AND CONTROL/INSTRUMENTATION CABLES SHALL NOT BE INSTALLED WITHIN THE SAME CONDUIT.
- PENN BREEZWAY FAN PACK, 3530 CFM AT .125" STATIC PRESSURE, 1/2 HP, 230 V, SINGLE PHASE. FAN PACK SHALL INCLUDE MODEL P18Q FAN, GALVANIZED STEEL WALL SLEEVE, REAR FAN GUARD AND COMBINATION LOUVER/SHUTTER, OR APPROVED EQUAL. INSTALL BOTTOM OF UNIT AT 8'-0" AFF.
- UNIT HEATER SHALL BE Q-MARK MODEL MUH-05, 5.0 KW, 240 VOLT, SINGLE PHASE, 650 CFM, OR APPROVED EQUAL WITH BUILT-IN T-STAT AND WALL MOUNTING BRACKET. INSTALL BOTTOM OF UNIT AT 8'-0" AFF.
- TIMERS SHALL BE 24 HOUR WITH 2 NORMALLY OPEN AND 2 NORMALLY CLOSED SETS OF CONTACTS. TIMERS SHALL BE POWERED FROM 120 VOLTS CIRCUITS INDICATED.

LEGEND

	CONDUIT RUN CONCEALED IN WALLS AND EXPOSED ELSEWHERE
	CONDUIT RUN CONCEALED IN OR BELOW FLOOR OR BELOW GRADE AS APPLICABLE
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	TICK MARKS: INDICATE NUMBER OF CONDUCTORS IN A CONDUIT IN ADDITION TO EGC. NO TICK MARKS INDICATE TWO CONDUCTORS IN ADDITION TO EGC
	HOMERUN TO PANELBOARD
	FLUORESCENT LIGHTING FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	PENDENT MOUNTED LIGHTING FIXTURE
	EXIT LIGHTING FIXTURE, WALL MOUNTED
	EMERGENCY BATTERY LIGHT
	SINGLE POLE SWITCH
	THREE WAY SWITCH
	NEMA 5-20R DUPLEX RECEPTACLE, "WP", WHERE USED, INDICATES WEATHERPROOF. "GFI", WHERE USED, INDICATES GROUND FAULT INTERRUPTER.
	TWIST LOCK RECEPTACLE WITH NEMA CONFIGURATION INDICATED
	480/277 VOLT PANELBOARD
	208/120 VOLT PANELBOARD
	JUNCTION BOX
	MOTOR
	MANUAL MOTOR STARTER, PROVIDE WITH POLES AND AMPERE RATING AS REQUIRED FOR THE LOAD AND ENCLOSURE AS INDICATED
	DISCONNECT SWITCH, 3 POLE, 30 AMP, NON-FUSIBLE UNLESS OTHERWISE INDICATED
	DISCONNECT SWITCH, 3 POLE, 30 AMP, NON-FUSIBLE UNLESS OTHERWISE INDICATED, PROVIDE WITH AUXILIARY CONTACT
	DISCONNECT SWITCH, 3 POLE, 30 AMP, FUSIBLE
	REMOTE PUSH BUTTON CONTROL STATION
	TRANSFORMER
	HAND-OFF-AUTO (HOA) OR AUTO-MANUAL AS INDICATED, FIELD MOUNTED DEVICES
	GROUND ROD
	GROUND GRID
	CONNECTION TO GROUND



- For vertical bend down in excess of 11 1/4" bend, anchorage shall be conical.
- For vertical bend upward, blocking to be similar to that for horizontal bend.
- Glands & bolts shall be protected from conc. by plastic sheeting when pouring thrust blocks.
- All thrust block & support conc. shall be 3000 psi ready mix
- Thrust blocks with "B" dimension greater than 30" shall have the restrained pipe installed with a minimum of 4' of cover.

200 psi PRESSURE =
2000 psf BEARING =
1.5 FACTOR OF
SAFETY =

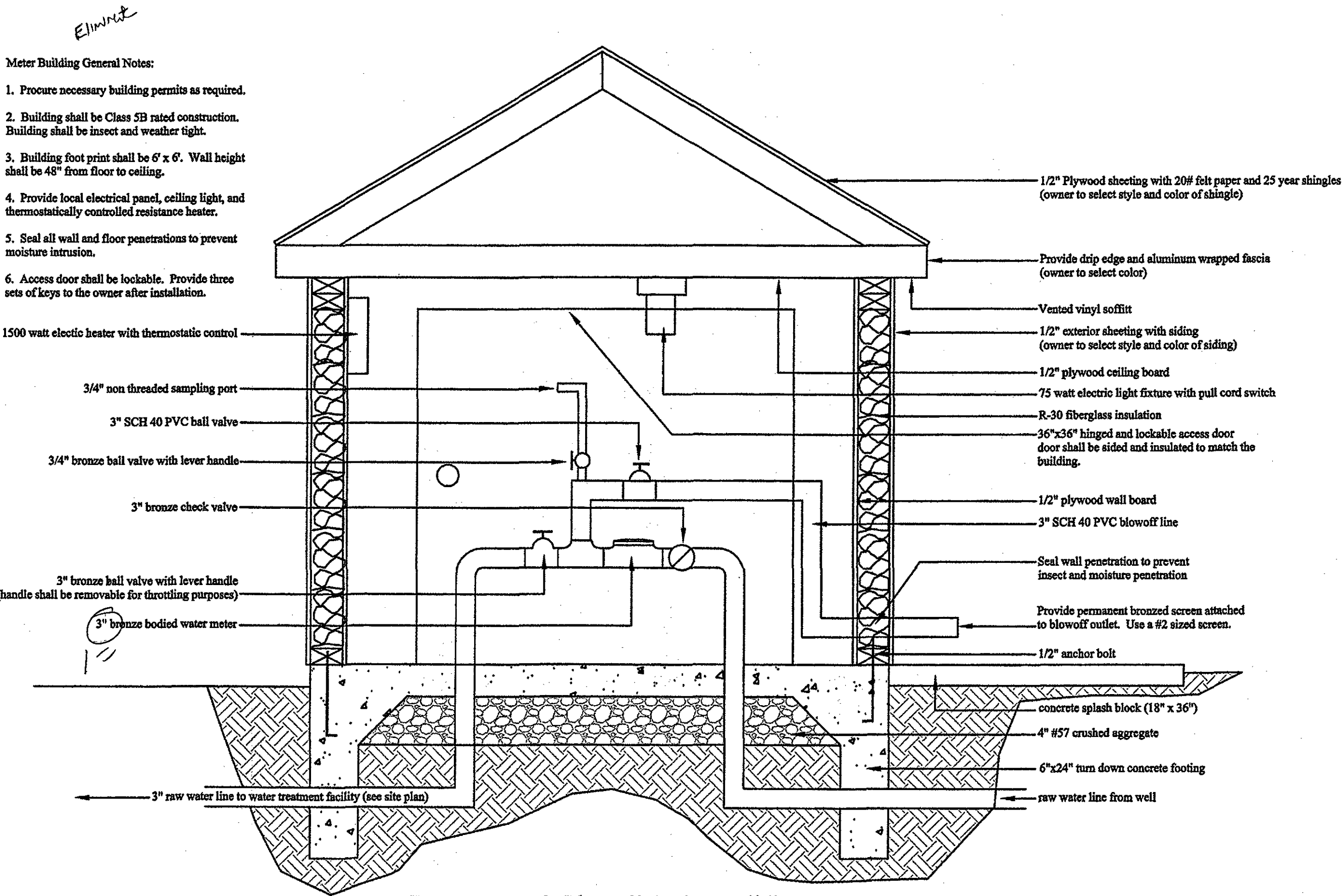
FACTOR OF SAFETY = 1.5												
PIPE SIZE	PIPE MATL.	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE /PLUG	TEE BRANCH (NOTE 2)	REDUCER	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°	
6"	D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'	
8"	D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'	
10"	D.I.	45'	19'	9'	4'	61'	57'	20'	37'	18'	9'	
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'	
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'	
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'	
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'	
12"	PVC	56'	23'	11'	6'	106'	88'	56'	66'	32'	16'	

- All joints shall be restrained on both sides of the fitting for the length shown unless otherwise indicated.
- Reducer is one size smaller than pipe listed. Restrained length is upstream on the large side of the reducer.

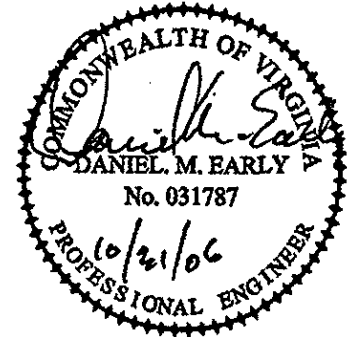
THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
	A B	A B	A B	A B	A B	C D
4"	8"	12"	8"	8"	8"	11"
6"	18"	12"	8"	8"	8"	11"
8"	18"	13"	10"	10"	8"	8"
10"	20"	16"	12"	14"	8"	12"
12"	20"	16"	12"	14"	8"	12"
16"	26"	20"	16"	18"	11"	13"
24"	82"	42"	62"	30"	44"	22"
30"	185"	42"	100"	42"	52"	42"

THRUST BLOCK CONSTRUCTION



Water Meter & Blowoff Station Building
NTS



ACS
DESIGN

ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
CONSTRUCTION MANAGEMENT

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The Coves at Smith Mountain Lake
Optima Properties-Smith Mountain Lake, LLC
Franklin County, Virginia

DRAWN BY: AH
DESIGNED BY: DME
CHECKED BY: DME
DATE: 01 MAY 2006
JOB NUMBER: 05271

REVISIONS:	
No. 1	08/18/06
No. 2	10/3/06
No. 3	6/16/07
No. 4	FINAL FOR CONSTRUCTION

SHEET NO.:
C4.7

WATER SYSTEM
NOTES & DETAILS